

REMARKS

Claims 1-23 were presented for examination. Applicants acknowledge with appreciation the indication of allowable subject matter in Claims 5-9 and 12. Claims 1-23 were rejected under 35 U.S.C. §112. Claims 1-4, 10-11, and 13-23 were rejected variously under 35 U.S.C. §§102 and 103 in view of U.S. Patent Nos. 2,154,146 to Becker (Becker), 1,688,891 to Spreen (Spreen), 2,632,861 to Morton et al. (Morton), and Japanese Patent No. 44-171316 to Takara et al. (Takara).

The instant amendment cancels Claims 10-11 and 16 without prejudice and adds new Claims 24-26. Thus, Claims 1-9, 12-15, and 17-26 are presented for consideration.

Allowable Claims

Claims 5 and 12, which were indicated as containing allowable subject matter, have been amended to include all of the elements of the base claim and any intervening claim from which they depend.

Specifically, Claim 5 has been amended to incorporate the elements of Claims 1 and 2. Thus, Claim 5 is now believed to be in a condition for allowance.

Claims 3 and 4 have been amended to depend from Claim 5. Accordingly, Claims 3-4 and 6-9 are also now believed to be in a condition for allowance, since they depend from and add further limitations to the aforementioned Claim 5.

Claim 12 has been amended to incorporate the elements of Claim 10. Thus, Claim 12 is now believed to be in a condition for allowance.

Claims 13-15 have been amended to depend from Claim 12. Accordingly, Claims 13-15 are also now believed to be in a condition for allowance, since they depend from and add further limitations to the aforementioned Claim 12.

Rejection under §112

Claims 10-11 and 16 have been cancelled without prejudice, rendering the rejection to the same moot.

Claim 1 recites, in part, a radial spring, and thus does not require the "tolerance band" element. Reconsideration and withdrawal of this rejection with respect to Claim 1 is requested.

Applicants respectfully traverse the rejection of Claims 2-9, 12-15, and 17-23. Specifically, it is submitted that the "tolerance band" element is definite. Moreover, Applicants respectfully traverse the assertion that the "tolerance band" is a "vibration tolerance band".

Applicants are given a great deal of latitude in how they choose to define their invention so long as the terms and phrases used define the invention with a reasonable degree of clarity and precision. See MPEP 2173.05(e). If the scope of a claim would be reasonably ascertainable by those skilled in the art, then the claim is not indefinite. *Ex parte Porter*, 25 USPQ2d 1144, 1145 (Bd. Pat. App. & Inter. 1992).

By way of example only, the specification provides:

"A much lighter press fit could be used for the stator 20 to resolve the distortion problem. Empirically, it has been found that the proper interference needs to be approximately .002" to eliminate the cogging effect. However, this solution is unsatisfactory due to the thermal expansion issues. To solve these conflicting requirements, a tolerance band 26 is employed to secure the stator 20 to the housing 16. Tolerance band 26 allows for the employment of a light radial force, which is equivalent to that provided by the press fit interference of about .002", while still securing stator 20 inside of housing 16." See Page 5, line 28 through Page 6, line 3.

The specification also provides:

"The number, size and shape (flat curves, lenticular, circular, etc.) of the waves 32 could be easily altered for a given application to provide any desired holding force while minimizing or eliminating cogging from the motor 10. The specific dimensions of the tolerance band 26 would heavily depend on the application. The size, torque output, thermal range, acceptable addition to cogging and commutation ripple,

noise emission, and vibration transmission of the motor will all effect the end design, or sizing of the tolerance band 26, including its spring rate." See Page 6, lines 25-32.

Thus, the "tolerance band" secures the stator in housing, tolerates or accommodates thermal expansion of the housing in a manner that provides a light radial force, which mitigates cogging. In addition, the "tolerance band" also minimizes vibration transmission of the motor. The "tolerance band" is clearly not limited to a "vibration tolerance band".

For the reasons set forth above, it is submitted that the "tolerance band" element defines the invention with a reasonable degree of clarity and precision with respect to the scope of the disclosure provided. Accordingly, reconsideration and withdrawal of this rejection with respect to Claims 2-9, 12-15, and 17-23 is respectfully requested.

Claim 21 has been amended to change "top portion" to "crest". It is submitted that this amendment merely makes explicit what had been implicit in the claim. Reconsideration and withdrawal of this rejection is requested.

Rejections under §§ 102 and 103

Claims 10-11 and 16 have been cancelled without prejudice. Claims 3-4 have been amended to depend from allowable Claim 5. Similarly, Claims 13-15 have been amended to depend from allowable Claim 12. Accordingly, the rejections of these claims are now moot.

Claim 1 has been amended to recite, among other elements, a radial spring and a dampening material. The radial spring retains the stator within the housing. The dampening material dissipates any free vibration and absorbs forced vibration. Support for this amendment can be found in the specification at least at Page 7, lines 21-31. No new matter is added.

It is submitted that the cited references do not teach or suggest a brushless D.C. motor having both a radial spring and a dampening material.

Morton is directed to a resilient packing member formed on a thin strip of metal. This resilient packing member exerts a radial pressure between the inner stator core and the outer shell. See Col. 1, lines 39-55. Morton does not teach or suggest a dampening material. Thus, Morton does not teach or suggest the combination now claimed.

Spreen is directed to means for decreasing vibration and noise in an electric motor. An annular soft rubber member 17 is disposed between the stator 14 and the frame 16. The member 17 insulates the stator from the motor frame 16 to absorb the vibration of the motor and therefore to eliminate noise resulting from the vibration. See Col. 1, lines 20-45. Spreen does not teach or suggest a radial spring. Thus, Spreen also does not teach or suggest the combination now claimed.

Becker is directed to a stator 18 secured within the inner walls 15 of the housing by a pair of corrugated tapered rings 20. The rings 20 are wedged between the inner walls 15 and the stator 18. See Col. 2, lines 35-40. Becker does not teach or suggest a dampening material. Thus, Becker does not teach or suggest the combination now claimed.

Takata is directed to stators 5a and 5b secured within a shell 1 by an elastic body 12 as illustrated in Figure 1. Alternately, Takata is directed to stators 5a secured to an inner shell 15, where the inner shell 15 is secured within the shell 1 by a wavy member 14 as illustrated in Figure 3. However, Takata does not teach or suggest the use of both a dampening material and a radial spring member. Thus, Takata does not teach or suggest the combination now claimed.

As set forth above, none of the cited references teach or suggest the use of both a radial spring member and a dampening material in combination with one another

as now claimed. Accordingly, Claim 1 is now believed to be in a condition for allowance.

Claims 17-23 have been amended to depend from Claim 1. Since Claims 2 and 17-23 depend from and add further limitations to the aforementioned Claim 1, they are also believed to now be in a condition for allowance.

New Claims

Claims 24-26 have been added to more particularly point out various aspects of the present application and have been carefully drafted to avoid questions under 35 U.S.C. § 112. Support for new Claims 24-26 can be found in the specification at least at Page 6, lines 1-5 and 14-16, as well as in Figure 1. No new matter is added.

It is believed that new Claims 24-26 are in a condition for allowance, since Claims 24-26 depend from and add further limitations to the aforementioned Claim 1. In addition and by way of example only, it is submitted that none of the references teach or suggest a radial spring providing a radial force equivalent to that provided by a press fit interference of about .002 inches.

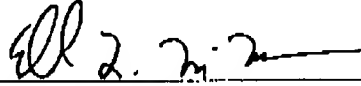
Summary

Attached hereto is a marked-up version of the claims captioned "Marked Up Version of the Prior Pending Claims".

In view of the above amendments and the discussion relating thereto, it is submitted that the present application is in condition for allowance. Such action is most earnestly solicited. If for any reason the Examiner feels that consultation with Applicants' attorney would be helpful in the advancement of the prosecution, she is invited to call the telephone number below for an interview.

If there are any charges due with respect to this Amendment or otherwise,
please charge them to Deposit Account No. 06-1130

Respectfully submitted,



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: STRONG ET AL.)
SERIAL NUMBER: 09/813,740) ART UNIT
FILED: March 21, 2001) 2834
FOR: BRUSHLESS D.C. MOTOR) EXAMINER:
Nguyen, Tran

MARKED UP VERSION OF THE PRIOR PENDING CLAIMS**IN THE CLAIMS:**

Please cancel Claims 10-11 and 16 without prejudice. Please
amend/replace Claims 1, 3-5, 12-15, and 17-23 as follows:

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Claim 1. (amended) A brushless D.C. motor comprising:
a housing having a groove;
a stator positioned within said housing; [and]
at least one radial spring positioned in said groove between said housing
and said stator to retain said stator within said housing; and
a dampening material disposed in said groove for dissipating any free
vibration of said stator and for absorbing forced vibration transmitted from said stator.

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Claim 3. (amended) The brushless D.C. motor of claim [2] 5 wherein said tolerance
band has a first and a second end.

Claim 4. (amended) The brushless D.C. motor of claim [2] 5 wherein said tolerance
band is made from steel.

Claim 5. (amended) [The brushless D.C. motor of claim 2 wherein] A brushless D.C. motor comprising:

a housing;

a stator positioned within said housing; and

at least one radial spring positioned between said housing and said stator to retain said stator within said housing, wherein said radial spring is a tolerance band having a plurality of waves formed thereon, said housing includes a groove and said tolerance band is positioned within said groove.

Claim 12. (amended) [A tolerance band as claimed in claim 10] A tolerance band to press fit a stator in a motor housing comprising:

a length of sheet material; and,

a plurality of wave structures formed in said length of sheet material,

wherein at least one of said plurality of wave structures is distinct from a remainder of said wave structures.

Claim 13. (amended) A tolerance band as claimed in claim [10] 12 wherein said plurality of wave structures are lenticular in shape.

Claim 14. (amended) A tolerance band as claimed in claim [10] 12 wherein said tolerance band is annular.

Claim 15. (amended) A tolerance band as claimed in claim [10] 12 wherein said tolerance band includes first and second ends spaced from one another.

Claim 17. (amended) The [tolerance band] brushless D.C. motor of claim [16] 2 wherein said plurality of waves are equally spaced [between said first and second ends] from one another.

Claim 18. (amended) The [tolerance band] brushless D.C. motor of claim 17 wherein said [body] tolerance band is generally circularly shaped.

Claim 19. (amended) The [tolerance band] brushless D.C. motor of claim 17 wherein said waves have a crest offset a predetermined distance from said body.

Claim 20. (amended) The [tolerance band] brushless D.C. motor of claim 18 wherein said crest is generally curved in shape.

Claim 21. (amended) The [tolerance band] brushless D.C. motor of claim 18 wherein said [top portion] crest is generally flat in shape.

Claim 22. (amended) The [tolerance band] brushless D.C. motor of claim 18 wherein said tolerance band is made from steel.

Claim 23. (amended) The [tolerance band] brushless D.C. motor of claim 18 wherein said tolerance band is made from an elastomeric material.